PCI Ultra160 SCSI Adapter
AEC-67162M

User's Manual

—— Version:1.1 ——

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Table of Contents

Chapter 1 Introduction 4
1.1 Overview 4
1.2 Features 4
1.3 Specifications 4
1.4 OS Compatibility 5
1.5 Power Mac Compatibility 5
1.6 Package 5
Chapter 2 Hardware Installation 6
2.1 Board Layout 6
2.2 Install the Adapter 6
2.3 Connect Internal Devices 7
2.4 Connect External Devices 8
Chapter 3 System Installation 9
3.1 Install AEC-67162M into the New OS 9
3.1.1 In Mac OS 9 9
3.1.2 In Mac OS X 10.3 10
3.2 Install AEC-67162M into the Existing OS 12
3.2.1 In Mac OS 9 12
3.2.2 In Mac OS X 10.3 13
3.3 Verify System Profiler 14
Chapter 4 Troubleshooting 18
Appendix Update the Driver 19
Technical Support Form 21

Chapter 1 Introduction

1.1 Overview

ACARD AEC-67162M is a high-performance, 2-channel, PCI-to-Ultra160 SCSI adapter. It has the full features of PCI 64-bit bus master transfer capability and PCI enhanced data transfer commands. It is fit for Macintosh workstations and servers.

1.2 Features

- Ultra160 2-channel SCSI adapter
- Data transfer rate up to 160MB/s per channel
- PCI bus master reduces CPU's I/O loading
- Domain validation for the probably highest data transfer rate
- Upgradeable on-board flash firmware
- Double-edge clocking technology
- 32-bit CRC (Cyclic Redundancy Check) for data security
- Cable length up to 12 meters in LVD mode
- 80MIPS RISC SCSI phase engine
- Supports 64-bit/66MHz PCI bus master
- Supports multitasking and multithreading
- Supports SCSI-1, SCSI-2, SCSI-3, Ultra SCSI, Ultra2 SCSI, and Ultra160 SCSI
- Connects up to 30 SCSI devices (15 per channel)

1.3 Specifications

■	Power requirement ---	Voltage: 3.3V +/– 2%
		5V +/– 2%
		Current: 0.5A Max.
■	Environment ---	Operation temperature: 0°C to 60°C
		Storage temperature: –20°C to 85°C
		Humidity: 15% to 90%

- Dimensions --- Width: 16.76cm
  Height: 8.83cm
- Connectors --- Two 68-pin SCSI internal connectors and
  one 68-pin SCSI external connector

1.4 OS Compatibility

- Mac OS 9
- Mac OS X 10.2.x (non-bootable)
- Mac OS X 10.3

1.5 Power Mac Compatibility

- Power Mac G3 Blue & White
- Power Mac G4 Series
- Power Mac G5 Series

> AEC-67162M doesn't support the upgraded mode of Power Mac.

1.6 Package

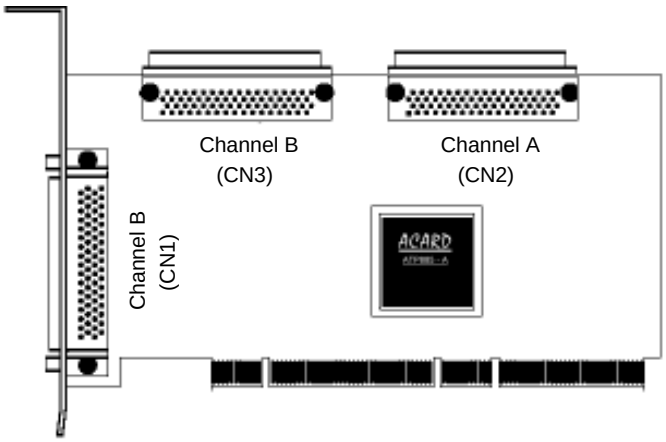
When you open the package, please examine the following items.

- AEC-67162M SCSI Adapter × 1
- Internal SCSI Cable × 2
- Terminator × 2
- User's Manual × 1
- ACARD Support CD × 1

Chapter 2 Hardware Installation

2.1 Board Layout

The layout of AEC-67162M board is shown as follows.



Channel B (CN1): 68-pin Ultra160 LVD SCSI external connector
Channel A (CN2): 68-pin Ultra160 LVD SCSI internal connetor
Channel B (CN3): 68-pin Ultra160 LVD SCSI internal connector

2.2 Install the Adapter

Please follow the steps below to install the adapter AEC-67162M.
(1). Power off the Mac computer.
(2). Unplug the power cord of the Mac computer.
(3). Open the Mac computer's case (refer to Mac Hardware Installation Guide).
(4). Locate an unused PCI expansion slot. Unscrew and remove the slot cover.
(5). Insert the adapter's PCI edge connector into the slot firmly (as figure on P.7).
(6). Screw the adapter to the PC frame.
(7). Close the Mac computer's case.

2.3 Connect Internal Devices

Connect internal devices to the adapter according to the following steps.

(1). Connect one end of the internal SCSI cable to any one of the adapter's 2 internal connectors.

(2). Find an unused connector on the other end of the cable, and connect it to your SCSI device.

(3). Repeat step 2 if you want to connect more than one devices.

(4). Add a terminator to the last end of the cable.

(5). Be sure that the devices' ID numbers don't conflict with one another.

(6). Do not set SCSI ID to 7, which is reserved for the host adapter.

2.4 Connect External Devices

Connect one external device to the adapter according to the following steps.

(1). Connect one end of the external SCSI cable to the adapter's external connector.

(2). Connect another end of the SCSI cable to the first connector of your SCSI device.

(3). Add a terminator to the second connector of the device and enable it.

Connect more external devices to the adapter in a daisy chain according to the following steps.

(1). Connect one end of the SCSI cable to the adapter's external connector.

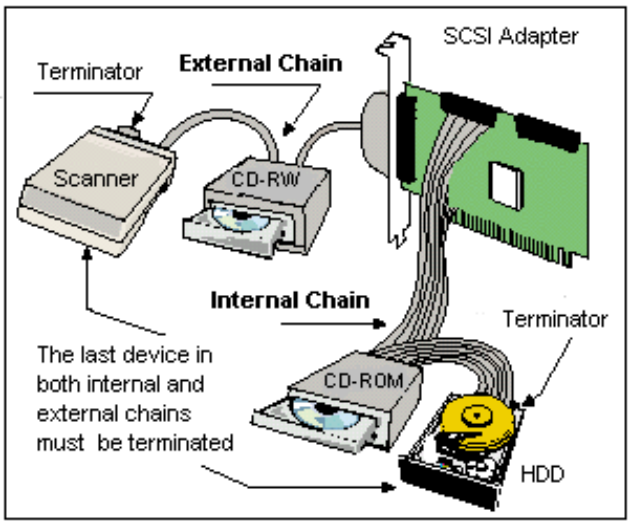
(2). Connect another end of the SCSI cable to the first connector of your first SCSI device.

(3). Get another external SCSI cable, and connect its one end to the second connector of the first device.

(4). Connect another end of the SCSI cable to the first connector of your second SCSI device.

(5). Repeat step 3 to 4 when you connect more devices.

(6). Add a terminator to the second connector of the last device and enable it.



Chapter 3 System Installation

After installing hardware, please install the driver of AEC-67162M. There are two choices. The first one is to install the driver into a new OS that is in the hard drive connected to AEC-67162M as stated in 3.1. The second one is to install the driver into an existed OS as stated in 3.2.

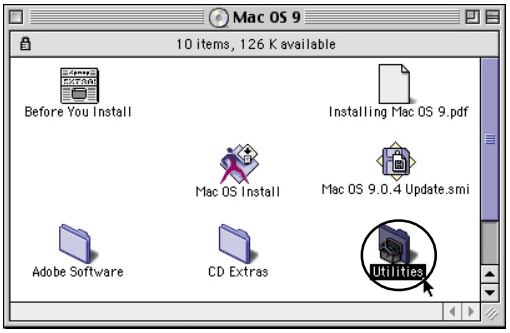
> No driver of AEC-67162M is built in OS X 10.1.x and 10.2.x, so you cannot install an OS into the hard drive connected to the adapter and boot hence.

3.1 Install AEC-67162M into the New OS

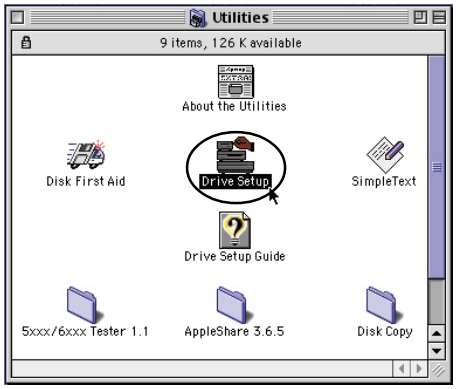
Here we take OS 9 and OS X 10.3 as examples to show the installation into the hard drive connected with AEC-67162M. After installation you can boot from AEC-67162M or the original hard drive.

3.1.1 In Mac OS 9

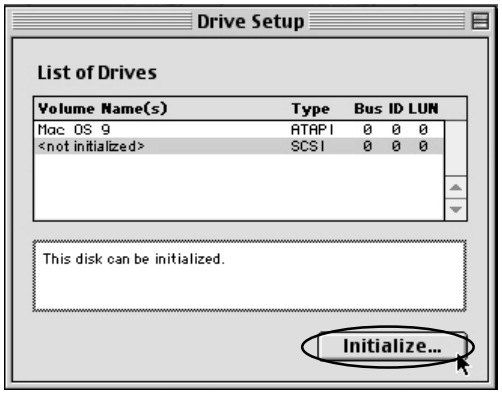
1. Be sure that the hardware is installed correctly.
2. Insert the OS 9 source CD into CD/DVD-ROM.
3. Power on and press “C” key.
4. Wait for the appearance of OS 9.
5. Double click “Utilities”.



6. Double click “Drive Setup”.



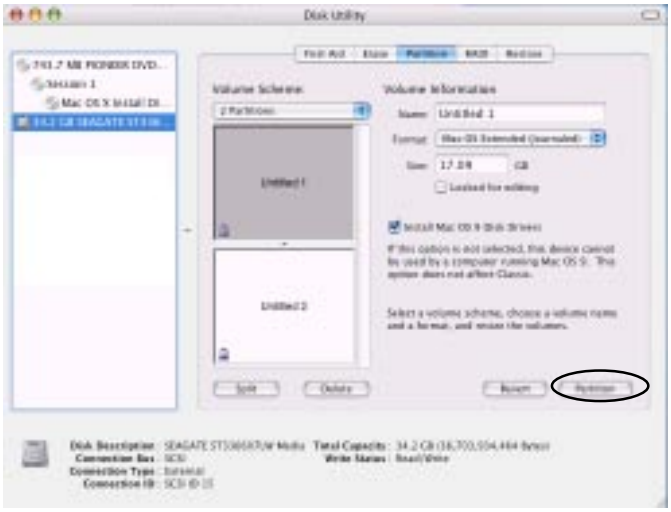
7. Choose the hard drive connected to AEC-67162M, then click “Initialize”. For detailed information of “Drive Setup”, please refer to Mac OS manual.



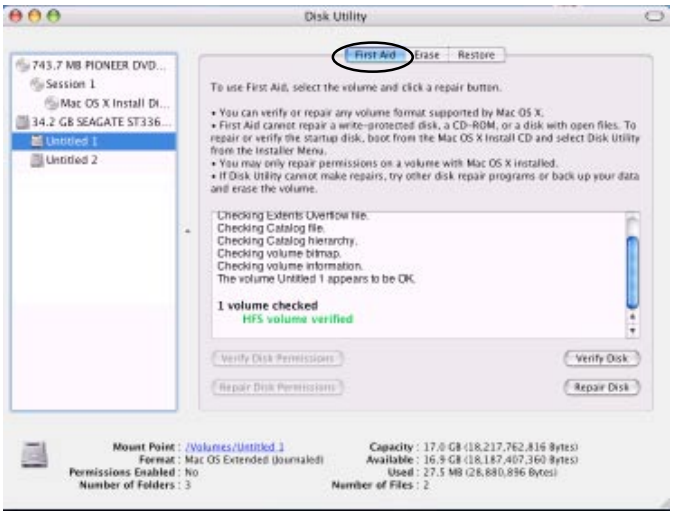
8. Start to install OS 9 onto the hard drive.

3.1.2 In Mac OS X 10.3

1. Be sure that the hardware is installed correctly.
2. Insert the OS X source CD into CD/DVD-ROM.
3. Power on and press “C” key.
4. Before installation, click “Installer” on the top selection row.
5. Click “Open Disk Utility”.
6. Choose a hard drive to initialize, and click “Partition” to decide the number of partitions you need.



7. After partitioning or erasing the volume, you can click “First Aid” to verify the disk partition into which you are about to install OS X 10.3.


Disk Utility
First Aid
Erase
Restore
743.7 MB PIONEER DVD...
Session 1
Mac OS X Install Di...
34.2 GB SEAGATE ST336...
Untitled 1
Untitled 2
To use First Aid, select the volume and click a repair button.
• You can verify or repair any volume format supported by Mac OS X.
• First Aid cannot repair a write-protected disk, a CD-ROM, or a disk with open files. To repair or verify the startup disk, boot from the Mac OS X Install CD and select Disk Utility from the Installer Menu.
• You may only repair permissions on a volume with Mac OS X installed.
• If Disk Utility cannot make repairs, try other disk repair programs or back up your data and erase the volume.
Checking Extents Overflow file.
Checking Catalog file.
Checking Catalog hierarchy.
Checking volume bitmap.
Checking volume information.
The volume Untitled 1 appears to be OK.
1 volume checked
HFS volume verified
Verify Disk Permissions
Verify Disk
Repair Disk Permissions
Repair Disk
Mount Point : /Volumes/Untitled 1
Format : Mac OS Extended (Journaled)
Permissions Enabled : No
Number of Folders : 3
Capacity : 17.0 GB (18,217,762,816 Bytes)
Available : 16.9 GB (18,187,407,360 Bytes)
Used : 27.5 MB (28,880,896 Bytes)
Number of Files : 2

8. Quit “Disk Utility” and start the OS X 10.3 installation.
9. Refer to Appendix for updating the driver of AEC-67162M.

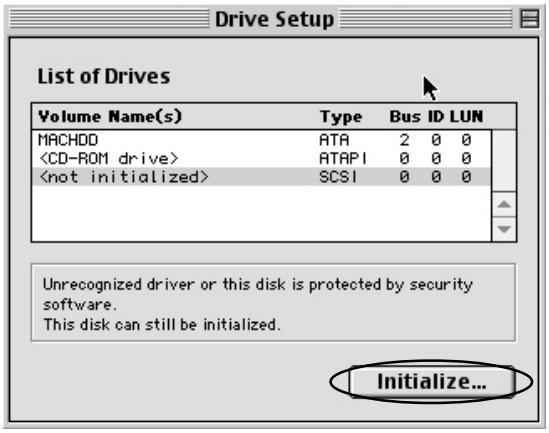
3.2 Install AEC-67162M into the Existing OS

We are going to install AEC-67162M into the existing OS 9 and OS X 10.3.

3.2.1 In Mac OS 9

1. Be sure that the hardware is installed correctly.
2. Power on.
3. Double click “Utilities” under Folder\Applications.
4. Double click “Drive Setup”.

5. Choose the newly installed hard drive, and click “Initialize”.

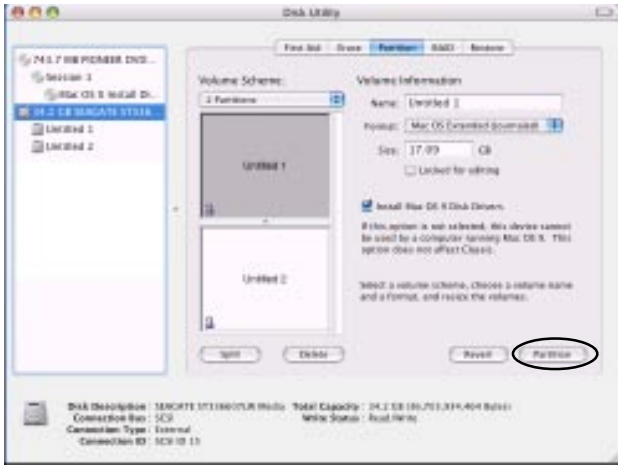


6. You can see the initialized or partitioned volume on the desktop.

3.2.2 In Mac OS X 10.3

1. Be sure that the hardware is installed correctly.
2. Power on.
3. Double click “Disk Utility” under OnBoard\Applications\Utilities (OnBoard represents the OnBoard Mac hard drive).

4. Initialize the newly installed hard drive by clicking “Partition”.



5. You can see the partitioned or erased volume on the desk.
6. Refer to Appendix for updating the driver of AEC-67162M.

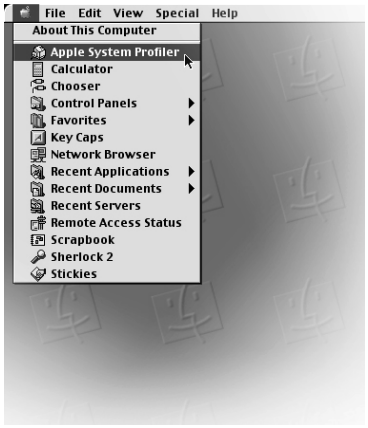
3.3 Verify System Profiler

In Mac OS 9

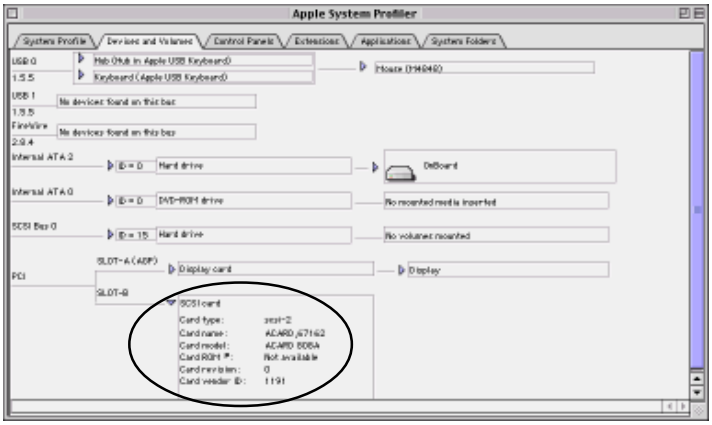
After you initialize the hard drive successfully, a new “Untitled” hard drive icon will appear on the Mac window. Of course you can give the hard drive a name.

You can find the information of AEC-67162M under the Apple Logo. Please follow the instructions below to read the system information.

1. Click Apple Logo and choose “Apple System Profiler”.



2. Under “Apple System Profiler” click “Devices and Volumes” to read the status of devices. And choose “PCI” to find the SCSI adapter and hard drives.



In Mac OS X 10.3

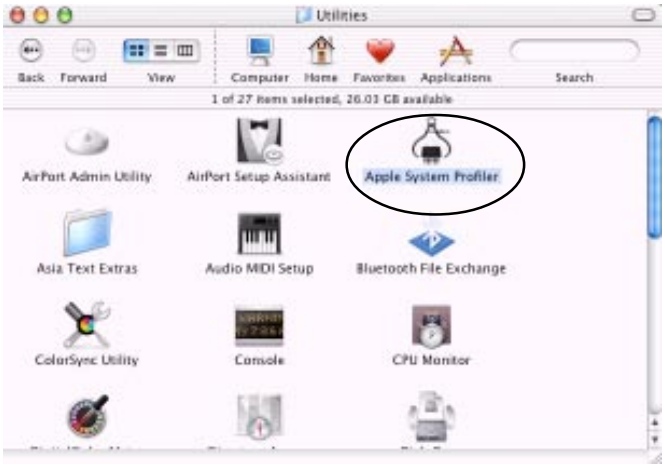
Basically if you have installed the hard drive and AEC-67162M successfully, and have partitioned or erased the hard drive, one or more hard drive icons will appear on the desktop. You can use the Disk Utility to verify or repair the hard drive when it has something wrong.

You can find the information of AEC-67162M under the Apple Logo. Please click “About This Mac” and then “More Info”.

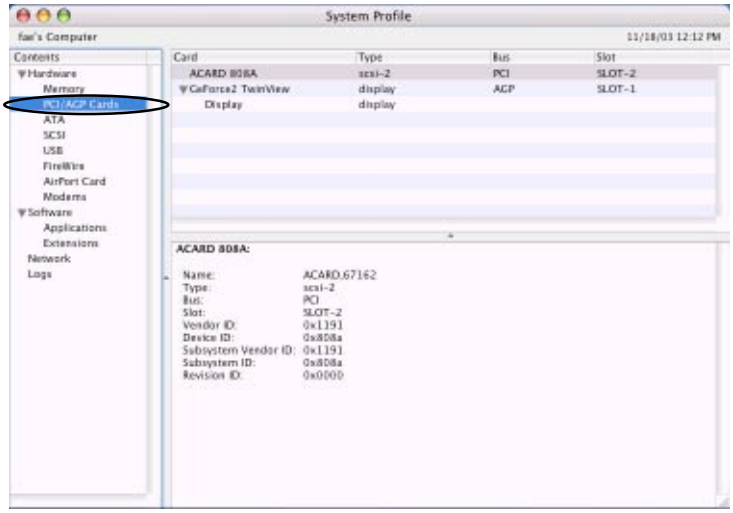
Another way of finding the system information is described below.

1. Click “Finder” at the bottom of the Mac OS screen.

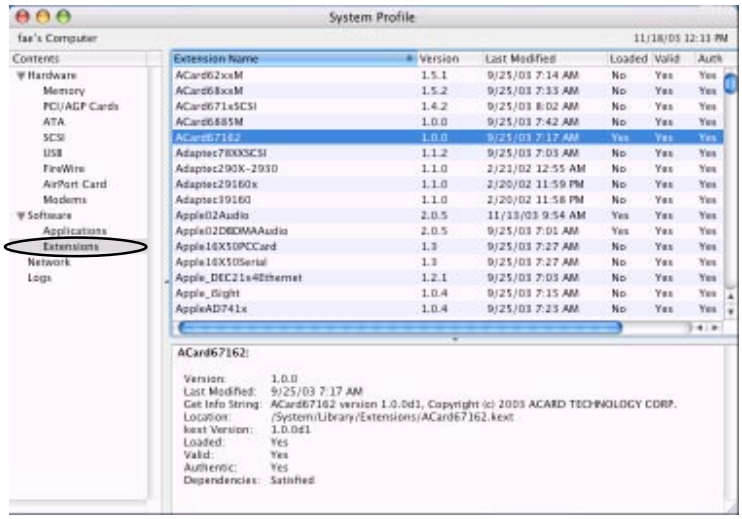
2. Click “Applications” on the tool row.
3. Under “Applications” click “Utilities”.
4. Under “Utilities” click “Apple System Profiler”.



5. Under “Apple System Profiler” click “PCI/AGP Cards” to read the detailed information of AEC-67162M.



6. Click “Extensions” to see the version of AEC-67162M’s driver.



Chapter 4 Troubleshooting

After installing AEC-67162M, if it cannot work normally, please follow the checklist given below to solve the problems.

1. Power status

Check if the power is strong enough for all connected devices. For external SCSI devices you need to power them on before booting the system.

2. The adapter

Check if the adapter AEC-67162 is inserted firmly into the slot on the motherboard. If the adapter is fine but cannot be detected, that is usually bad connection. You can remove the card and insert it into the original or the other PCI slot again.

3. Connectors and cables

Check if all power connectors, SCSI connectors and internal or external SCSI cables are connected well. Be sure that connector pins aren't bent, and cables aren't damaged because of improper fold.

4. The external cable

If you connect a lot of SCSI devices to the system via daisy chain with an external SCSI cable but fail constantly, you had better replace the cable with another fine one, for it might be the cable that causes failure.

5. SCSI ID

Check if each SCSI device has a unique ID number. Don't let ID numbers conflict with one another so as to avoid errors.

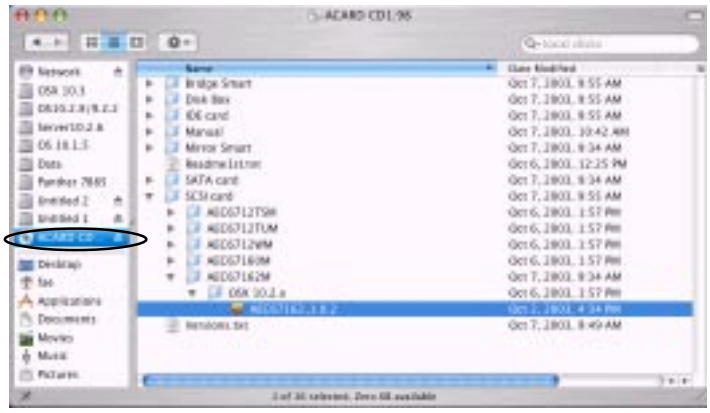
6. Terminator

If some or all devices on the SCSI bus have been correctly installed but cannot be detected by the adapter, it is usually the problem of terminator. The possible causes are lack of terminator, bad installation of terminator, two or more terminators on the same bus, and terminator of bad quality.

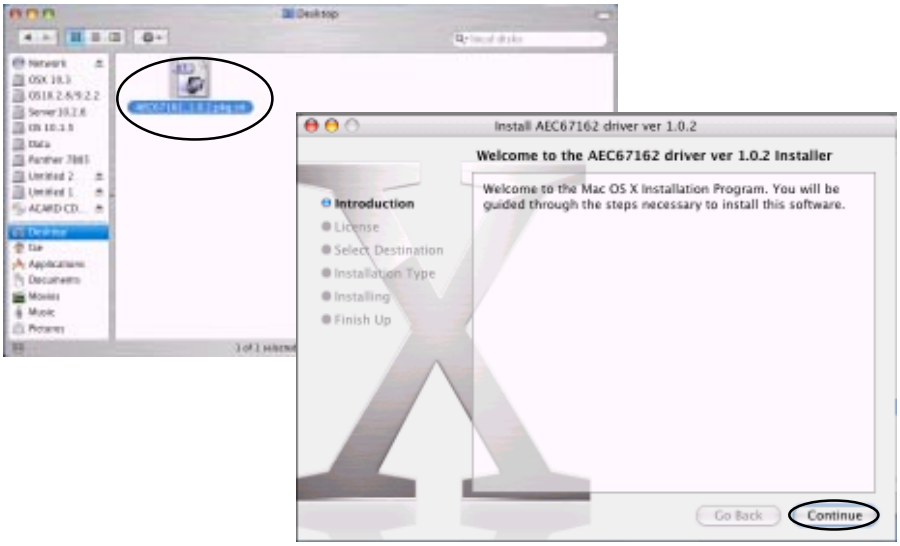
Appendix Update the Driver

The update of AEC-67162M's driver is good for system stability and reliability. Please follow the steps below to update the driver.

1. Find the newest driver from ACARD support CD, or download the driver from the web site. The path is as follows: SCSI Card\AEC67162M\OSX\AEC67162.1.0.2.

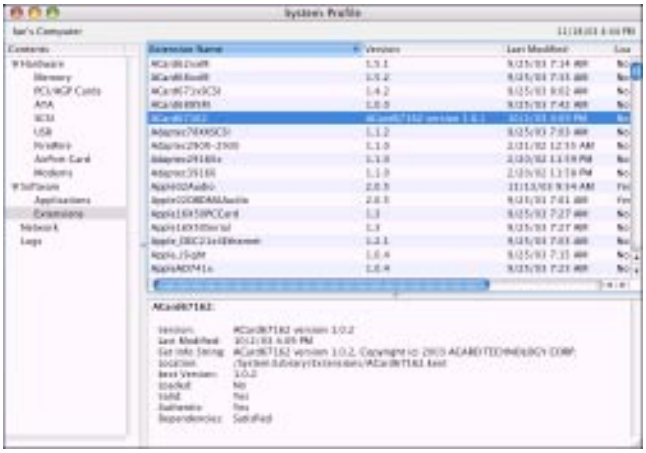


2. Double click "AEC67162.1.0.2", and follow the wizard to install.


Install AEC67162 driver ver 1.0.2
Welcome to the AEC67162 driver ver 1.0.2 Installer
Welcome to the Mac OS X Installation Program. You will be guided through the steps necessary to install this software.
Introduction
License
Select Destination
Installation Type
Installing
Finish Up
Go Back
Continue

3. Restart the system.

4. Go to the Apple Logo, click “About This Mac” and then “More Info”. Under “System Profile” click “Extensions” to see the updated version of AEC-67162M’s driver.



Technical Support Form

Email: **support@acard.com**

http://www.acard.com

Model	AEC-67162M	**F/W Version**	
System Configuration			
Mainboard			
Firmware			
SCSI adapter			
Chipset			
Memory			
Display card			
Other I/O card			
OS version			
Hard Disk Configuration			
Hard Disk Model/type			
Capacity			
Firmware version			
Others			
Problem Description			